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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/553,436 | 03/21/2006 | Robert A. Macina | DEX0477US.NP | 6995 |

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| EXAMINER | |
|---|---|
| ZHOU, SHUBO | |
| **ART UNIT** | **PAPER NUMBER** |
| 1631 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 04/06/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/553,436 | MACINA ET AL. | |
| | Examiner | Art Unit | |
| | Shubo (Joe) Zhou | 1631 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-6,8-10 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-10 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 January 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Amendments*

Applicants' amendments and request for reconsideration in the communication filed on 1/18/07 are acknowledged and the amendments entered.

Claims 1-6, 8-10, and 16 are currently pending and under consideration.

### *Drawings*

The replacement drawings filed 1/18/07 are acknowledged and accepted.

### *Specification*

The specification is objected to because of the following:

It appears that trademarks are used in this application, such as ISEE on page 401. Trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner that might adversely affect their validity as trademarks. This objection is reiterated from the previous Office action mailed 9/18/06. Although applicant's amendment filed 1/18/07 capitalized certain trademarks such as PLATINOL on page 24, trademarks such as ISEE in the specification are still not capitalized. In light of the lengthy specification (more than 400 pages), applicant is requested to review the entire specification to ensure all trademarks are capitalized as appropriate.

The other objections to the specification set forth in the previous Office action are hereby withdrawn either in view of applicant's amendments to the specification or in light of applicant's argument. See pages 20-21 of the response filed 1/18/07.

Appropriate correction is required.

***Withdrawn Rejections***

The rejection of claims 1-6, 8-10, and 16 under 35 U.S.C. 101 is hereby withdrawn in view of applicant's arguments filed 1/18/07. See pages 21-22 of the response filed 1/18/07.

For the same reason, the rejection of claims 1-6, 8-10, 16 and 18 under 35 U.S.C. 112, first paragraph (enablement rejection – because the claimed invention lacks a patentable utility due to its not being supported by a specific, substantial, and credible utility or, in the alternative, a well-established utility, one skilled in the art clearly would not know how to use the claimed invention) is also withdrawn.

The rejection of claims 1-6, 8-10, 16 and 18 under 35 U.S.C. 112, first paragraph (written description rejection with regard to hybridization), is hereby withdrawn in view of applicant's amendments to the claims filed 1/18/07.

The rejection of Claims 2-6, 8-10, 16 and 18 under 35 U.S.C. 112 , second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, set forth in the previous Office action, is hereby withdrawn in view of applicant's amendments to the claims filed 1/18/07.

***Claim Rejections-35 USC §112***

The following is a quotation of the **first** paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 8-10, and 16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for detecting risk or presence of colon cancer, lung cancer, in a human patient, does not reasonably provide enablement for detecting risk or presence of colon cancer, lung cancers in a patient other than humans, or detecting risk or presence of cancers in human patient for cancers other than colon cancer, lung cancer, such as prostate cancer. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

This rejection is modified from the previous Office action.

In *In re Wands* (8 USPQ2d 1400 (CAFC 1988)), the CAFC considered the issue of enablement in molecular biology. The CAFC summarized eight factors to be considered in a determination of "undue experimentation". These factors include: (a) the quantity of experimentation; (b) the amount of guidance presented; (c) the presence or absence of working examples; (d) the nature of the invention; (e) the state of the prior art; (f) the predictability of the prior art; (g) the breadth of the claims; and (h) the relative skill in the art. The factors are analyzed for the instant case as follows:

In the instant case, the amount of experimentation required by the skilled artisan in order to practice detecting risk or presence of cancers other than colon cancer, lung cancer, such as

prostate cancer would require an unpredictable amount of experimentation for the following reasons:

The claims are drawn to nucleic acid molecules or a kit comprising the same for detecting a risk or presence of cancer in a patient (see claim 16). The specification on pages 394-395 discloses that the expression of Cln224v1 is altered, over-expressed or down-expressed, in certain percentages of colon cancer samples and lung cancer samples compared to their adjacent normal tissues in humans, but there is no description in the specification that this nucleic acid of Cln224v1 is even expressed in a subject other than humans and/or its expression is altered in cancer samples of such subject compared to their adjacent normal tissues. Further, for cancers other than colon cancer and lung cancer, such as prostate cancer, in humans, there is no description in the specification that the expression of Cln224v1 is altered in the cancer compared to its adjacent normal tissues so that it can be used as a marker for detecting risk or presence of the cancer. Similarly, the specification does not provide guidance, nor does it provide any working example, as to how to use such a nucleic acid molecule or kit comprising the same to detect the risk or presence of any cancer other than colon cancer and lung cancer such as leukemia in a patient.

The nature of the invention, i.e. a kit comprising a nucleic acid molecule for use to detect the risk or presence of a cancer in a patient, is complex. The prior art does not teach or fairly suggest such a kit. The skilled practitioner would first turn to the instant specification for guidance in practice of using the kit comprising the nucleic acid molecule comprising the sequence of SEQ ID NO:36 to detect the risk or presence of colon cancers or lung cancers in a patient other than a human patient such as an animal pet, or detecting the risk or presence of cancers in a human patient for any cancers other than colon cancer, lung cancer, such as prostate

cancer or leukemia. However, the specification does not provide sufficient guidance or working example of practicing the invention. As such, the skilled practitioner would turn to the prior art for such guidance. However, the prior art does not teach such a kit. Finally, said practitioner would have to turn to trial and error experimentation for practicing using the claimed nucleic acid for detecting risk or presence of colon cancer, lung cancer in a patient other than humans, and cancers other than colon cancer, lung cancer, such as prostate cancer or leukemia in human s without adequate guidance from the specification or the prior art. Therefore, undue experimentation becomes the burden of the practitioner.

Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claim is drawn to a genus of kit comprising nucleic acid molecules that can be used for detecting risk or presence of cancers in a patient. This clearly is a large genus including kits for detecting any cancers in any patients including humans and nonhumans.

A description of a genus may be achieved by means of a recitation of a representative number of species, falling within the scope of the genus, or by means of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus. Regents of the University of California v. Eli Lilly & Co., 119 F3d 1559, 1569, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). In the instant case, as set forth above in the section of enablement rejection, the specification discloses only a species: a kit comprising the nucleotide

sequence of SEQ ID NO:36 for diagnosis of colon cancer and lung cancer in a human patient, but there is no adequate description for a kit that can be used for detecting any cancers including prostate and leukemia in a human patient or colon cancers and lung cancers in a nonhuman patient such as an animal pet. Given that Cln224v1 is not known in the art and there is no indication in the specification that this gene is differentially expressed in cancers other than colon and lung cancers in humans, and differently expressed in colon and lung cancers in nonhuman patients, the single disclosed species, i.e. a kit for detecting colon and lung cancers in humans, is not representative of the genus, i.e. a kit for detecting any cancers in any patients.

Therefore, one skilled in the relevant art would have reasonable doubt that the inventor(s), at the time the application was filed, had possession of the claimed invention.

***Claim Rejections-35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-6, 8-10, and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by Oikawa et al. (Biochemical and Biophysical Research Communications, Vol. 142, pages 511-518).

This rejection is reiterated and modified from the previous Office action wherein the modification is necessitated by applicant's amendment to the claims including adding hybridization and wash conditions.

The claims are drawn to any nucleic acid molecules that selectively hybridize to the nucleic acid of SEQ ID NO:36 under stringent hybridization and wash conditions.

Oikawa et al. disclose a nucleic acid molecule, referred to as CEA, comprising a sequence that is about 80% identical to the sequence of SEQ ID NO:36. See the attached sequence alignment between SEQ ID NO:36 and the sequence of GenBank accession number M15041, which is the same sequence as that disclosed by Oikawa et al. See the text portion of the sequence alignment. Given that the two sequences share such a relatively high sequence identity (about 80%) and best local similarity (about 96%), it would be readily apparent to one skilled in the art that the two sequences would hybridize to each other, at least in some portions, even under stringent hybridization and washing conditions.

As to claim 2, Oikawa et al. disclose a cDNA molecule comprising the sequence.

As to claims 4-6, given that Oikawa et al. disclose that the cDNA was obtained from RNA of human colon tissues (see pages 512-513), it is apparent that Oikawa et al. also disclose an RNA molecule that hybridizes with the nucleic acid comprising SEQ ID NO:36, and the nucleic acid molecules are from human, which is a mammal.

As to claims 8-9, Oikawa et al. disclose that the cDNA is in the vector lambda gt11 and in E. coli cells.

As to claim 10, Oikawa et al. disclose that the cDNA clone from the cDNA library is done by immunoscreening assays with a rabbit anti-CEA antibody. Given that it would be well known that the lambda gt11 vector is an expression vector comprising control sequences allowing the expression and translation of the insert sequence, and that the immunoscreening assay is an assay wherein the insert is allowed to be expressed and polypeptide is produced in the host cells before the binding assay with the antibody, it is apparent that Oikawa et al. disclose a method for producing the polypeptide encoded by CEA.

As to claim 16, given that the CEA cDNA is isolated by Oikawa et al. in a laboratory, it must have been contained in a container. Such a container having therein the cDNA is interpreted as being a kit.

Applicant's arguments filed 1/18/07 have been fully considered but they are not persuasive. Applicant argues that the claims have been amended to include stringent hybridization and washing conditions, and Oikawa et al. does not teach a nucleic acid that hybridize under such conditions to a nucleic acid comprisiing SEQ ID NO:36. This is not found persuasive. As set forth above, because the nucleic acid sequence disclosed by Oikawa et al. and the sequence of SEQ ID NO:36 share such a relatively high sequence identity (about 80%) and best local similarity (about 96%), it would be readily apparent to one skilled in the art that the two sequences would hybridize to each other, at least in some portions, even under stringent hybridization and washing conditions.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (f) he did not himself invent the subject matter sought to be patented.

Claims 1-6, 8-10, and 16 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter.

This rejection is reiterated from the previous Office action mailed 9/18/06. In the response filed 1/18/07, applicant does not provide specific arguments against the rejection but requests that the rejection be held in abeyance. See page 27 of the response.

For the reasons discussed below in the section of double patenting rejection, it is apparent that copending Application No. 10/558861 contains claimed subject matter in claims that is not patentably distinct from instant claims 1-6, 8-10, and 16. Because the inventive entity of copending Application 10/558861 is different from the instant application, a rejection is appropriate under 35 U.S.C. 102(f). This rejection could be overcome by amendment of the appropriate claims so that the claims are patentably distinct, or by filing a declaration stating the inventive entity for the commonly claimed subject matter is identical.

***Provisional Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-6, 8-10, and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8-10, 16 and 18 of US copending Application No. 10/558861.

An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim is not patentably distinct from the reference claims because the examined claim is either anticipated by, or would have been obvious over, the reference claims. See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

This rejection is reiterated from the previous Office action mailed 9/18/06. In the response filed 1/18/07, applicant does not provide specific arguments against the rejection but requests that the rejection be held in abeyance. See page 27 of the response.

Claims 1-6, 8-10, and 16 of the instant application are drawn to nucleic acid molecules comprising the sequence of SEQ ID NO:36 or any nucleic acid that encodes the polypeptide of SEQ ID N):194, which is encoded by SEQ ID NO:36, or any nucleic acids that hybridize selectively with any of the above under stringent conditions.

At least for one embodiment, 1-6, 8-10, 16 and 18 of US copending Application No. 10/558861 are drawn to nucleic acid molecules comprising the sequence of SEQ ID NO:52 or

any nucleic acid that hybridizes selectively with the sequence of SEQ ID NO:52. Sequence comparison performed by the Office shows that the sequence of SEQ ID NO:52 of the copending application is identical to the SEQ ID NO:36 of the instant application. Thus, claims 1-6, 8-10, and 16 of the instant application are anticipated by claims 1-6, 8-10, 16 and 18 of the copending US application, respectively.

***Conclusion***

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shubo (Joe) Zhou, whose telephone number is 571-272-0724. The examiner can normally be reached Monday-Friday from 8 A.M. to 4 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, Ph.D., can be reached on 571-272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system

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